Solving the *Contact* Paradox:

Rational Belief in the Teeth of the Evidence

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Abstract

Evidentialism is the doctrine that rational belief should be proportioned to one's evidence. By "one's evidence," I mean evidence that we possess and know that we possess. I specifically exclude from "evidence" the following: information of which we are unaware that our brain might rely on in constructing experience or in the formation of beliefs. My initial interest is with the doctrine of Evidentialism as it applies to a quandary that arises in the Sci-Fi movie *Contact*, the "*Contact* Paradox" as I will call it. In this movie one of the main characters, Ellie, is a cosmologist working in a radio-telescope research facility searching for signals from intelligent life in the cosmos. The entity whose epistemological status is at issue in her quandary is her deceased father but there is an obvious parallel between the quandary of a rational believer in God and Ellie's quandary, a parallel extensively explored in the movie itself. My first thesis is that in Ellie's case Evidentialism is false: in certain cases, it is rational to believe in the existence of an entity in spite of the fact that the empirical evidence overall is contrary, and the *Contact* Paradox is one such case. Later in the paper I turn attention to the issue of Evidentialism regarding beliefs in the existence of God. My second thesis is that Evidentialism is false there as well.

1. Introduction

1.1. Statement of goals

Evidentialism is the doctrine that rational belief should be proportioned to one's evidence. By "one's evidence" I mean evidence that we possess and know that we possess. I specifically exclude from "evidence" the following: information of which we are unaware that our brain might rely on in constructing experience or in the formation of beliefs. *Evidentialism* comes in several varieties, for example, *Religious Evidentialism,* which is the doctrine that rational religious belief should be proportioned to one's evidence. Dormandy argues for Religious Evidentialism in her recent paper "Religious Evidentialism" (2013, 107-108). She focuses on religious beliefs when they concern relationships that a believer has to God, in this case, loving and trusting, arguing that the evidential proportioning of belief in these cases is "an ideal-making feature" of those beliefs.

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My initial interest in the present paper is with the doctrine of Evidentialism as it applies to the character of Ellie in the well-known Sci-Fi movie *Contact*. I call this "The *Contact* Paradox."[1] The entity whose epistemological status is at issue is Ellie's deceased father, but there is an obvious parallel between the quandary of a rational believer in God and Ellie's quandary, a parallel extensively explored in the movie itself. My first thesis is that, in Ellie's case, Evidentialism is false: in certain cases it is rational to believe in the existence of an entity in spite of the fact that the empirical evidence overall is contrary, and the *Contact* Paradox is one such case (sometimes I will call the thesis that Evidentialism is false, "Anti-Evidentialism"). Indeed, I argue, there are cases in which it can be rational to believe *because* the empirical evidence overall is contrary, and here too the *Contact* Paradox is one such case.

I deploy two theoretical tools to achieve this. The first employs an account of psychological modeling reflective of Dennett's "intentionalist stance" (Dennett, 1971) wherein the modeling-processor detects the source of its inputs, tagging these inputs as originating in external or internal channels. I argue that, *from Ellie's point of view*, the rationality of her claim that the experience was real in spite of overwhelming evidence to the contrary can be ascribed to a registration at the conscious level of her experience that the modeling procedures have detected an external-source for the inputs. We are also interested in *third-party assessment* of this claim. To do so, I deploy the second theoretical tool, a specialized version of causal reasoning I get from Descartes. When properly formulated, it allows us to prove the truth of her claim.

Later in the paper I turn attention to the issue of Evidentialism regarding beliefs in the existence of God. My second thesis is that Evidentialism is false there as well. To show this, I use the specialized version of causal reasoning to justify, from the point of view of third party assessment, the rationality of beliefs with certain, specific religious content arising in the teeth of the evidence.

1.2. The story line of the movie Contact

In the movie *Contact,* Earth scientists in the SETI program receive a radio transmission from beings from another galaxy, providing the plans for a spaceship that will transport an earthling to their location. The person selected for the mission is a female scientist, Ellie, (played by Jodie Foster in the movie) who has always displayed a cool rationality, treating claims as hypotheses to be assessed in light of comparative probability based on the evidence. She has taken a dim view of religious claims, especially those based on religious experience, regarding the most likely hypothesis to be that these experiences are illusory. The day of the launch arrives and, after a brief trip, she appears to land on a distant planet where she meets her father, long deceased. She returns and we see her keen to reveal her exciting adventure. But we also see the launch from the vantage of the scientists and observers. What they perceive is a catastrophic failure: the craft simply drops into the sea one second after launch. At a debriefing, she is confronted by the firm belief of the others that she did not travel anywhere but, instead, experienced a hallucination. She grants that the evidence seems to point in that direction, but still insists that the experience was of

something real. The evidence in question comprises the fact that no one else saw the ship leave the launch site, the fact that her trip lasted a few seconds, insufficient time for her to reach the distant planet even if her capsule were travelling at the speed of light (which it was not), a limit placed on travel by the General Theory of Relativity, and the fact that hallucinations of the content-type which she experienced are accepted psychological events that typically occur when the brain is under unusual stresses, as hers would have been in this case.

1.3. The **Contact** *Paradox*

In the movie, it is not quite clear how we are intended to understand her act of affirmation: "It was real." Does it come from some inner yet mysterious insight into the metaphysical status of her experience? Does it come from access to some hitherto undiscovered source of empirical information? Does it indicate a slippage from rationality to irrationality? It is also not clear what *we* are to make of the situation. Could she possibly be right? Regarding the second question, I am going to assume that the scenario she described is at least logically possible, but will leave it open whether it is physically possible. Regarding the first, I am going to take a liberty with the original story line and dogmatically assert that she *is* fully rational both in her judgment in the original situation that she was having an experience of something real and, more controversially, in her judgment in the *post facto* situation that she was having an experience of something real. My task will be to explain how this could be possible, that is, how it could be possible for her to be fully rational in both situations.

1.4. Outline of the Solution to the **Contact** *Paradox*

I propose to develop my answer to this question in several stages. In the first, I will offer a version of empiricist epistemology that Audi has called "Moderate Foundationalism" (Audi 2003: 209 ff.) as an explanation for how Ellie's initial judgment is epistemically warranted. If her initial judgment has this property then she is acting rationally in my sense. In the second stage, I will tackle the more difficult question of how Ellie's *post facto* judgment could be rational. I will be arguing that in order for this to be possible, there must be a source of empirical information available to Ellie's cognitive system even if not to Ellie herself as a conscious epistemic agent. The information is about the source of the stimulus for her experience: Is it internal to her cognitive system or external to it? When the cognitive system becomes aware of this information, the "stimulus-source location information" as I will call it, the system can then carry out operations to determine rationally what beliefs the conscious subject should form regarding that experience. These operations need to be in accord with rules governing the rational processing of information, including all the undermining information that she has come to acquire in the time since she had the experience. We will find that these rules cannot be the simple rules of an empiricist epistemology like Moderate Foundationalism; but they must, of course, nevertheless satisfy a generally defensible paradigm of epistemic warrant. I argue that this paradigm must include an element of causal reasoning about the experience.

In developing the properties of this paradigm, it is important that we not make it incapable of error, in particular, incapable of allowing for the possibility that we are subject to illusions and hallucinations, and are sometimes fully taken in by them. It is also important that the causal reasoning be of such a kind that it is compatible with the possibility of brain-in-a-vat illusions. So the epistemic model must meet these additional conditions. I argue that such a paradigm is to be found in the kind of causal reasoning that Descartes employs in the proof of the material world in Meditation VI. I adopt this kind of reasoning as a principle of general epistemology. I also adopt an "intentionalist stance" to cognitive theory (Dennett, 1971). If we take this stance and describe the operations of cognition in terms of the cognitions of epistemic "homunculi" (epistemic processing modules using intentional and epistemic cognitions), then we can "reverse engineer" the kind of rules that have to be followed by the epistemic processor in charge of producing our reality-judgments. In this way, I will have explained how Ellie's judgments about the reality of her experience in both the original and the *post facto* situation could be both fully rational for her despite a strong body of undermining evidence in the latter situation. I then show how we, as epistemologists assessing her situation objectively, can also rationally arrive at the same result.

2. Ellie's Rationality

I have two main tasks here: to explain the rationality of Ellie's belief in the reality of her out-of-world experience when she was having it (the original situation) and to explain the rationality of her *post facto* assessment after she has received objective undermining information.

To accomplish the first task I will first draw upon a principle in Audi's Moderate Foundationalism,* which he calls the "Visual Experience Principle":

> If S has an experience as though p were the case then in the absence of undermining evidence S is justified in believing that p is the case. (Audi, 2003: 21)

In the original situation, Ellie experiences something that looks like her long-dead father walking toward her down a beach on a distant planet. She comes to spontaneously believe that she actually is on something that looks like a beach and sees something real that looks like her father. These are *judgments of objective experience,* the rationality of which I seek to explain by appeal to the Visual Experience principle. For my purposes, the canonical form of a judgment of objective experience is a statement of the form "There is a real entity x external to my mind that I am experiencing and I am experiencing x as having property P." Ellie has an experience of something that *looks like* a beach and of something that *looks like* her father walking towards her down the beach, both real entities, and has

* A reader interested in more details about this theory and the place of Foundationalism in Epistemology generally may consult Technical Appendix 1.

no information available to her consciously that undermines the belief. So, by the Visual Experience Principle, she is rational in believing the corresponding judgment of objective experience. Now, this may be disputed on the grounds that the strangeness of the world apparently revealed to her and of the journey she has just undertaken taken by itself does lower the probability that her belief is true from what would be the case with a normal experience, hence would count as an undermining reason. But I am taking "undermining reason" here in a "net sense," meaning that when the strangeness-of-experience information is taken together with the knowledge of the background to her trip, then either the undermining effect of the strangeness-information is cancelled out altogether, or considerably counteracted.

Moderate Foundationalism could also handle in a straightforward way the rationality of Ellie's believing retrospectively that her experience had been illusory or hallucinatory, if that had been what she had come to believe in the *post facto* situation, for in this case there *is* evidence available to her that is undermining of her initial belief that the objects of her experience were real. But Moderate Foundationalism cannot handle the present assumptions: that Ellie has undermining evidence in the *post facto* situation and that her belief in the reality of her experience is fully rational in this situation. This is partly because Moderate Foundationalism is a form of epistemic internalism, a family of theories of epistemic warrant, that restricts evidence to subjective states of putative knowers to which they have introspective access. No evidence of this kind is available to Ellie to allow her belief to receive a positive degree of warrant from Moderate Foundationalism. Now, Audi's form of moderate foundationalism allows for sources of inferential warrant to supplement the Visual Experience Principle, for example, inferring from experiential and other premises to the best explanatory hypotheses, inferences that might in principle sustain the claim for Ellie that her experience was veridical notwithstanding the mass of contrary evidence. But she is in possession of no such evidence, at least no such evidence that meets the requirements of a fully internalist epistemology.

But it is possible that some evidence is available to Ellie that does not meet these requirements. One such piece of evidence that seems likely to me to be available to Ellie's cognitive system is information about which channels are being used for the conduit of stimuli that trigger the formation of phenomenal experience. If we suppose that a person's cognitive system as a whole has a boundary that separates it from things external to it, and that modules of cognitive operations within the system, for example, the visual system, also have boundaries that separate them from each other, it is in principle possible for the cognitive system as a whole, and individual functional modules therein, to monitor the passage of stimuli across boundaries.

Let us say that this is how things happen and that the cognitive system as a whole and its modules tag incoming stimuli with information on which channels are transmitting them and which boundaries they have crossed en route. To simplify things, let us suppose that these tags simply say, with respect to a given stimulus, whether it has come in via an external channel or via a channel originating somewhere within the boundaries of the cognitive system, and that they say so with complete reliability. I will call the former an "external-source information tag" and the latter an "internal-source information tag." I will

also suppose that these source-information tags constitute evidence that is internal to the cognitive system and available to epistemic cognitive modules operating beneath the level of consciousness and not available to conscious epistemic processing.

I follow Richard Gregory in taking the visual system to create a kind of visual hypothesis about what is going on in our spatial environment based on information inbound from the environment via the eyes and other senses (see Gregory, 1966). On my account, the visual hypothesis is a spatial model of our environment, the construction of which is initiated when the model-constructing system detects information coming in from an external channel. From our conscious point of view, the "visual hypothesis" is just the experience of the way things look itself, which the Visual Experience Principle then turns into judgments of experience. On the other hand, when information is detected coming from internal channels, then other kinds of models are produced, for example, models of our emotional and other psychological states.

In the next section, I postulate that sometimes the source-information tags are not generated at all or are not properly read due to abnormal conditions in the brain: this is when problems arise with the veridicality of the models. For example, on my account, when this happens with external source-location tags, the spatial-model building continues by default, creating hallucinatory experiences, a false visual hypothesis about what is going on in our environment. This hypothesis still interacts in the usual way with the Visual Experience Principle to create the usual judgment of experience, one which is, in this case, unveridical.

I am not asserting that this model is actually realized in the psychological mechanisms of human cognition, though it might be, but I am hypothesizing this psychological model as part of the answer to the question, how it is scientifically possible for general *Anti-Evidentialism* to be true in the *Contact* case – that is, how it is scientifically possible for Ellie to have rational warrant in believing in the reality of her other-worldly experience – and to the question, how it is scientifically possible for *Religious Anti-Evidentialism* to be true – that is, how it is scientifically possible for us to have rational warrant for believing in God in the teeth of contrary empirical evidence.

The method that I am employing here is an adaptation of Kant's "regressive" method in metaphysics, with an element from his "progressive" method (Kant 1984 [1784], 28, note). A reader interested in details may consult technical Appendix 2. The regressive part of my own method can be expressed as with the following conditional statement: (1) If this model is correct, and if certain other assumptions are correct, e.g. that Ellie is a perfectly rational agent in the *Contact* case or that we are perfectly rational agents in the God case, then Anti-Evidentialism would be true in both the *Contact* case and in the case of the existence of God.[2] In the progressive part I show (2): that both of the key assumptions are scientifically possible. (I show this by constructing models in which these assumptions hold within the materials and the general principles of modern neuroscience.) From (1) and (2) I derive my conclusion (3): that Anti-Evidentialism is scientifically possible in the *Contact* case and in the case of the existence of God.

Notice that, in my method, the conditionalized assumption is itself merely a possibility (a scientific possibility) rather than a truth; consequently, the progressive part of the method establishes a possibility rather than a truth. This is, of course, easier to do than having to establish that the model in question is true. Nevertheless, it is an important step on the way to establishing the truth about Anti-Evidentialism in the case of God. Further steps await further developments in science. There is, for example, Marcel Just's program in cognitive brain-imaging to determine the basis of our concepts in neurological coding. One of the base-functional areas of the brain that is the subject of imaging in this program determines our concepts of "inside vs. outside." (See, for example, Just 2020. Just is director of the brain-imaging program in the Psychology Department at Carnegie Mellon University.)

The key contribution of this model comes in its provision to the epistemic procedural-module of information about the source of experience-inducing stimuli. As mentioned, when this information is read by the epistemic procedural module, it treats this information as a premise available for further unconscious activity in building a model of what is going on in our environment. However, I am proposing that, at the level of Ellie's conscious understanding, this information registers as an unexplained conviction that her other-worldly experience has been real.

But why is it *rational* for Ellie to believe that this conviction is true despite all the contrary evidence? This is the *Contact* Paradox and solving it requires answering this question. The answer lies in her conviction that she is a fully rational agent, an assumption that I think is in force in the movie and which we are granting for the sake of the argument. A fully rational agent is rational all the way down. What this means is that all cognitive processes, whether conscious or not conscious, that instantiate something epistemologists would accept as valid reasoning when they are working properly, are in fact working properly. A fully rational agent in this sense would retain a conviction in the reality of her experience in the teeth of all the evidence for its being hallucinatory only if there were information available to her cognitive system that was not available to her consciously, information which proved for her cognitive system that the experiences had a source outside of her. As a perfectly rational agent, Ellie would know this, thus know that she was right to believe in the reality of her experience despite all the contrary evidence.

Part of our job is now done. What remains is to give an account of the epistemic procedures that will assign *third-party warrant* to Ellie's veridicality claim. I believe that such an account is to be found in the epistemology of Descartes's proof of the material world in Meditation VI. However, before developing that account I need to deal with two related matters: hallucinations and brains-in-a-vat.

3. Hallucinations and Brains in a Vat

Ordinary Hallucinations.

People are sometimes taken in by illusions or hallucinations. Sometimes people are in exactly the situation of Ellie, but they actually have been hallucinating and discover this

only retrospectively when a large body of contrary evidence becomes available to conscious application of rational epistemic method. This method will involve an inference to the best explanation of all the evidence, including, but not restricted to, the experiential evidence, the result of which is that the experience should not be taken to be veridical. We certainly do not want our account to somehow render results like these irrational. But we also do not want to preclude the situation where we are taken in by a hallucination, either in the moment it is occurring or retrospectively. But how can this be avoided if source-location information is always available to the epistemic processor? Since the stimuli inducing hallucinatory experience (at least in normal cases of hallucinatory experience) are coming from internal channels, if the epistemic processor is apprised with complete reliability of this fact, then how can we ever be taken in by the experience?

This problem can be handled by the model I am proposing if we distinguish the case where source-location tags are being generated and read by the epistemic processor, but are giving unreliable information, from the case where source-location tags are not being generated to begin with, or, if generated, are not being read by the epistemic processor. The former case is ruled out by the infallibilist assumption of the model but the second case is not. Our analysis can then draw upon this possibility to explain the possibility of hallucinations which take us in.

In these cases information is internally generated, perhaps by the brain's capacity for imagination, but some event or condition of the cognitive system, abnormal neurochemistry for example, or drugs, prevents the formation of the internal source-location tags or prevents the processor from reading them. So, the processor does not know that the source is internal. Nevertheless, I hypothesize, the processor is pushed by default to produce a visual hypothesis as it would if the tags were external and were read as external. The visual hypothesis is the hallucinatory experience itself. But why are we taken in by it?

To explain this, we turn to the role of the epistemic processor. As far as it is concerned, the visual hypothesis has been correctly generated and its job is to arrive at a result about the veridicality status of the experience. But it has to proceed on the basis of an impoverished set of evidence, only the evidence of the visual hypothesis itself and whatever background information is available, no evidence from source-location tags. If we assume that the default mode of processing employs the rules of Moderate Foundationalism, we can see that the epistemic processor would generate the same judgment as it would in the case where the visual hypothesis was generated in the usual way from external inputs, thus explaining why we are taken in by the hallucination. However, because these inputs have not in fact occurred, the judgment yielded by the epistemic processor is *unveridical.* So our model can explain why sometimes we are taken in by our hallucinations while also explaining why sometimes we are not.

There is an important caveat. The events or conditions which prevent the formation or reading of the source-location tags are *abnormal* conditions. In the normal case, which can be assumed by default, source information tags are both written and read. However, two people, one with abnormal conditions suppressing the source-information who is

hallucinating, and one with normal conditions and non-suppressed source information (indicating an external source) who is not hallucinating, will both present the same behavior, confidently claiming the veridicality of their experience. So, it cannot be determined either by introspection in the first-person case, or by asking the subject to make a veridicality-judgment in the third-person case, absent an assumption about the normality of conditions in the brain, which is which. To be justified, this assumption must rest on objective, third-person evidence, for example, an examination by brain-imagining techniques of Ellie's brain functioning to determine that known causes of abnormal brain functions (anatomical malformations, drugs, etc.) are not present. I assume that this examination has been carried out and that the results were negative.

Brain-in-a vat experiences

A second kind of problem arises from that special class of experiences so dear to the hearts of epistemologists, those induced by artificial means in hypothetical brains-in-a-vat. Are they hallucinations? They are certainly not veridical experiences since, in such cases, there are objects apparently seen or otherwise perceived in the experience (the "objective content" of the experiences) and they typically do not exist. But does this mean they are hallucinatory? Let's say that a *potentially hallucinatory* experience is an experience with objective content of the kind which, if it were veridical, the cause of the experience would be external to the subject of the experience. For example, if the objective content of an elephant-dancing-on-the-sidewalk-in-front-of-me hallucination were veridical, it would be caused by a real elephant dancing on the sidewalk, an external object, so it counts as a potential hallucination. If, in addition, the experience is not caused by an external cause, then it is *actually hallucinatory***.** Brain-in-a-vat experiences are usually potentially hallucinatory in this sense but, because they are caused by external sources, they are not actually hallucinatory; yet they are also not veridical.

We are now in a position to formulate our definition of brain-in-a-vat experiences. In cases where an experience is *potentially* hallucinatory and is caused by an external object, I will say that the experience is *of a real object*. In these terms we can then say that a brain-in-a-vat experience is *a potentially hallucinatory, not-actually hallucinatory, non-veridical experience of a real object.*

As noted, what makes these cases different from normal hallucinations is that the stimulus that induces the experience comes through an external channel. On our model, source-location tags may or may not register this fact, depending on whether the existence of experimenter's neurological probes preserves "normal conditions" or makes for "abnormal conditions." Which of these eventualities will prove to be actual is something that has to await the realization of this possibility in an actual experiment.

Let us suppose that normal conditions are preserved and that the source-location tags are generated and read. When the epistemic processor takes account of this information it will enter the externality of the source of the stimulus as a premise for use in further reasoning. If the reasoning were to result in a *limited* judgment of objective

experience to the effect only that there is a real object of the experience external to my mind ("real object" for short) without ascribing any descriptive content to the object, this limited judgment would be veridical. But this is not all that the brain-in-a-vat believes: it also believes that there is a specific descriptive property-content for the real object. This is quite a different matter because the properties of the cause of the experience do not resemble the content of the experience: a field of apple-trees in the autumn sunshine, the objective content of a potential hallucination of a brain-in-a-vat, does not much resemble the properties of the external cause of the experience, the experimenter's computer, computer program and physical devices. If we now take the cause of the experience to be the real object of the experience, the real object is assigned properties by the cognitive system that it does not possess. So, the objective property-content of the experience, while of a real object, is not a veridical experience.

Now let us move to the situation of the third-party assessors of Ellie's situation. In this situation, she makes a claim about the reality of the objects in her other-worldly experience in the teeth of contrary evidence available to her. Our assessors have the task of determining whether she is right about this claim from the evidence available to them in that situation, including the contrary evidence, and other premises. These premises must square with the possibility of brain-in-a-vat scenarios and must, therefore, not require that an inference to the external reality of the object of an objective experience automatically yield an inference to the veridicality of its descriptive content. Yet it must also be possible for the principles of reasoning carried out by the epistemic processor to sometimes warrant a belief in the external reality of the objects of our experiences and to do so in the special circumstances where the preponderance of new evidence is against this, as is the case in the *Contact* example.

The conceptual apparatus of Descartes's theories of mind and knowledge is ideally suited to formulate this situation. When the cause of an idea, understood as a mental occurrence (understood "materially" in Cartesian terminology), has an actual external cause, it normally does not follow that the objective content of the idea (the "objective reality of the idea" in Cartesian terminology) is an actual external object. (Descartes defines the notions of actual and objective reality in the Geometrical Exposition in the Second Replies: Definitions III and IV [1984 (1641): 113-114].) For example, the cause of the event of my imagining a dragon in the dark woods at night might be an actual wind-blown bush, and yet the objective content of that imagining does not (one hopes) actually exist. The "objective content" in this case is the dragon. Descartes's term for objective content is "objective reality," not to be confused with the kind of reality had by "real objects." To avoid confusion for readers not used to Cartesian terminology, I will substitute the phrase "objective content" for "objective reality" in my subsequent discussion of Descartes, except for quotations.

In Section 4, I develop an account of Cartesian Epistemology in which this conceptual apparatus is front and center. In Section 5, I show that it gives a unified and correct account of the situations, described above, in which we are hallucinating and know that we are, are hallucinating and do not know that we are, are not hallucinating and know that we are not and, finally, it does not require that an inference to the reality of an

experience entail an inference to its veridicality. In Section 6, I present a formal reconstruction of an argument showing how, with certain information that could be available to third-party epistemologists in the *post facto* situation, Ellie was in fact right: her experience was real!

4. Cartesian Epistemology

In Axiom V of the Geometrical Exposition in the Second Replies, Descartes provides his statement of the causal principle as it applies to the objective content of ideas (CSM II, 116). Here is the full text of Axiom V and his commentary:

> It follows from this that the objective reality of our ideas needs a cause which contains this reality not merely objectively but actually or abstractly. It should be noted that this axiom is one which we must necessarily accept, since on it depends our knowledge of all things, whether they are perceivable through the senses or not. How do we know, for example, that the sky exists? Because we see it? But this "seeing" does not affect the mind except in so far as it is an idea – I mean an idea which resides in the mind itself, not as an image depicted in the corporeal imagination. Now the only reason that we can use this idea as a basis for the judgement that the sky exists is that every idea must have a really existing cause of its objective reality; and in this case we judge that the cause is the sky itself. And we make similar judgements in other cases. (CSM II, 116-117)

I have already explained intuitively what Descartes means by the term "objective content." I now explain what he means by the term "formal reality." If a substance s contains a reality R formally, then s is *actually* R. For example, if we say that the reality "redness" is contained formally in an apple, we are saying that the property of redness is contained in the apple in a way entailing that the apple is actually red. (Henceforth, as an aid to comprehension, I will use the term "actual" in place of the term "formal," except for quotations.)

Contrasting with Descartes's notion of the actual containment of a reality in a substance is Descartes's notion of the *eminent* containment of a reality in a substance. When a substance *s* contains a reality *R eminently, s* contains *R* in some non-actual way – that is part of Descartes's definition of eminent containment. But Descartes's account of eminent containment is notoriously obscure, and he doesn't give a clear positive account of it. I suggest that what he means by this term is that *s* contains an *abstract version* of *R, R**, but not actually *R* itself. The clearest example in Descartes of what is eminently contained is the containment of geometrical properties ("extension, shape, position and movement") in a mind, proposed in Meditation III (AT VII, 45; CSM II, 31). I understand Descartes's doctrine here to be that there is an abstract version of these properties (their "essence" as he would call it) and that it is the abstract version of these properties that would be eminently contained in our minds. (I will use the term "abstract" in place of the term "eminent," except for quotations.)

Descartes employs several versions of the causal principle to prove the existence of God in Meditation III, but he uses only one version, the Axiom V version, to prove the existence of the material world in Meditation VI. I have argued elsewhere (Vinci, 2016) that we can represent the proof structure in a 2X2 matrix of the possible causes of the corporeal properties that form part of the content of sensory ideas:

Cause **abstractly** contained/ cause *outside me*	Cause **actually contained**/ cause *outside me*
Cause **abstractly** contained/ cause *inside me*	Cause **actually contained**/ cause *inside me*

The two columns of the matrix itself are contributed by the Causal Principle, the two rows by a logical dichotomy. Descartes conceives his task as determining which of the four exclusive cells is correct and he proceeds by an elimination argument. (The argument is found on CSM II, 55.) First, he argues that any idea whose cause is not obtainable by introspection or which occurs without my will, must be sourced outside me. Since ideas of sensible objects have both of these characteristics, Descartes is able to eliminate the bottom row. Eliminating one of the columns is trickier, but by appeal to the non-deceiving nature of God, he eliminates the first column. This leaves only the top-right cell: corporeal properties are actually contained in the external-causes of ideas of corporeal objects: "It follows that corporeal things exist."

Notwithstanding Descartes's medieval terminology, this is an elegant proof by the standards of contemporary analytic philosophy, whose effectiveness is compromised for us only by the last step: the premise appealing to the existence of God. For Descartes, of course, this is not a problem since he has proven the premise previously in Meditations III and V, but since we shortly plan to use this argument schema to prove that very premise, we cannot accept it as a premise now. What we can accept is The Cartesian Causal Principle, which I formulate as follows:

> The objective property-content *P* of an experience of x must have a cause such that: (a) the cause is an actual substance *s;* and (b) *s* contains P actually or abstractly.

5. The Causal Principle, Ordinary Hallucinations and Brains-in-a-Vat

In cases of ordinary hallucinations with objective property-content *P,* experiences with this content are caused by an internal source. The Causal Principle allows for this in one of two ways: either the cause of the content is internal and contains *P* actually or the cause of the content is internal and contains *P* abstractly. I do not know of any counterexamples to this application of the principle and I propose to accept it.

The notion of the *veridicality of an experience* is crucial to our definition of brain-in-a-vat type experiences. We can easily explain this concept in Cartesian terms by reference to the Cartesian Causal Principle. What this principle affirms is that every idea or experience with an objective property-content P is caused by a substance that either contains P actually or abstractly. An example of causation by a substance containing P actually (an "actual idea-explanation") occurs when a sensory idea having the content *redness* has that content because there is a substance actually containing redness that causes that content. The substance in question might be a red apple whose color is responsible for the fact that I have a sense experience with the content of redness. As an example of causation by a substance containing P abstractly, we might choose a computer program that contains a mathematical representation of redness which can be used by an experimenter to induce artificially the experience of redness in us. This would count for Descartes as the abstract containment of redness because it is a representation of the mathematical essence of redness. We can now say that *an experience of an objective property-content P is veridical in case the cause of the experience contains P actually*.

In the case of *brain-in-a-vat experiences* with objective property-content *P,* this content is caused by an external source. The Causal Principle also allows for this because, like any causal principle, it allows for external causes of experiential contents that contain the content either actually or abstractly. But this principle has the added advantage of meeting two requirements we discussed above for the application of causal reasoning to establish the reality-status of brain-in-a-vat hallucinatory objects. The first requirement is that, to account for the fact that brain-in-a-vat experiences are of real objects, yet are not veridical, a satisfactory principle should block the inference from "The cause of the experience is a real external object" to "The experience is veridical." In virtue of the presence of the second disjunct ("or abstractly") in the statement of the Causal Principle above, it does this.

The second requirement is that any satisfactory principle should show how we can sometimes successfully infer that the objects of our experience are real external objects even in the teeth of apparently contrary collateral evidence. I now turn to showing how this requirement can be met by reasoning involving the Causal Principle.

6. Ellie's Claim and Third Party Assessment

Let us first review how this second requirement is met by Ellie's cognitive system. Recall that she expresses conviction that her other-world experience (of meeting her father on a beach on a distant planet) is real despite having considerable collateral information that this could not be. Our hypothesis is that she is fully rational and we are seeking to explain how this could be by supposing that human cognitive systems in general have the capability of determining the channels which bring stimuli to a functional module and create information about whether these channels are channeling stimuli which originate externally to the cognitive system or internally within the system. This information is

encoded on "source-location tags" and is then read by the given modules, in our case, the epistemic-processor module, and treated as premises by the processor for use in further inferences.

The epistemic-processor module is not, of course, in possession of a set of sophisticated Cartesian epistemic principles. So a distinction between experiences being of a real object, yet not being veridical, that can be drawn with the tools available in Cartesian Epistemology cannot be drawn with the tools available to the brain's epistemic processor module. However, the epistemic-processor module still has the capacity to produce experiential representations of the environment based on sensory stimuli reaching its processing site and also, I have just supposed, the capacity to determine the source-location of that stimulus. When it determines that the source-location is external, it classifies the experience itself as "real". This translates into a conviction at the level of conscious understanding that the experience is of a real object, without allowing for the possibility that it might be non-veridical.

We have now reviewed how Ellie could be rational in believing in the reality of the objects of her experience on the distant planet because of a process of unconscious cognitive processing. But, as epistemologists observing Ellie's situation, we are not in her position, and so the question arises whether we can justifiably accept Ellie's claim. We have one advantage over Ellie and her unconscious cognitive systems: we have access to the sophisticated apparatus of Cartesian epistemology, the unconscious cognitive systems do not. This allows us to draw the distinction between experiences that are of a real object and experiences that are veridical. But we are also at a disadvantage: we do not ourselves have immediate access to information about the source of Ellie's experience, and so cannot immediately say whether it is internally generated (as the other observers in the movie assume) or externally generated, as Ellie believes. So, unlike Ellie's unconscious cognitive system, we have to **infer** from her behavior and background assumptions the answer. For the unconscious cognitive system this is immediate, non-inferential knowledge.

The background assumptions are that Ellie is fully rational, possesses overwhelming collateral evidence that her experience is not real, and is not suffering from abnormal brain conditions. Yet she declares that her experience is of a real object. We have to explain this, and I have postulated that the most plausible explanation is that her cognitive system has read source-location tags indicating that the source of her experience is external. Employing an inference, in this case, inference to the best explanation, is *our* mode of knowing as objectively situated epistemologists, and it leads us to infer that the source of the stimulus is external. To distinguish the immediate way in which this information is known by the epistemic-processing module from the way we know it as objectively situated epistemologists, I will call the latter *inferred source-location information.* Applying the Causal Principle on top of the use of the inferred source-location premise, we conclude that the object of the experience is real.

This is the result that we, as epistemologists assessing Ellie's situation, arrive at directly; and it is additional to the result that Ellie herself is rationally justified in thinking that the object of her experience is real.

I formally represent the inference we (epistemologists) make as follows:

1. Ellie is having an objective experience E with her-father objective property-content. (Assumption)

2. The cause of her objective experience E is an actual substance containing the her-father objective property actually or abstractly. (1, 2, Causal Principle)

3. The source (cause) of E is outside her cognitive system. (Assumption: inferred source-location information)

Thus:

4. There is an actual substance containing the her-father objective property content either actually or abstractly existing in the world external to Ellie's cognitive system. (3, 4, Conjunction)

Thus,

5. The object of Ellie's experience is a real object. (Inference: from 4 and the definition of "real object")

Two important observations are in order. First. Because of the disjunction of the two modes of containment in line (4), we cannot infer that the experience is veridical, thus satisfying the first requirement mentioned at the end of the previous section. Second. While the experience (in this case) is potentially hallucinatory, it is not actually so because of the externality of the cause indicated in line (4). From this it follows in line (5) that Ellie's experience has a real object. Since this follows *whether or not her experience is veridical*, this satisfies the second of the requirements stated at the end of the previous section.

7. Conclusion: Hunting Bigger Game

Whatever were the intentions of the screenwriter, we are hunting Bigger Game. The Bigger Game is the development of an argument that would be able to legitimately prove the existence of God, given contemporary circumstances, which include overwhelming scientific evidence against the idea. In the version of Cartesian Epistemology developed here, we have the tools to do that, at least in principle. The inference just actualized in the case of Ellie has been developed to allow for easy generalization to the case of rational belief in the existence of God in just these circumstances.

Again, we begin by assuming a fully rational epistemic agent – call her "Sarah" -- having a religious experience. By a fully rational epistemic agent, I mean an agent who faithfully applies the epistemic principles her epistemic processor employs, is not driven from this path by epistemically extraneous considerations like a desire for her belief in God to be true or emotional commitments to religion, etc., and is not in an abnormal brain state. All that is different is for us to specify what kind of experience she is having. I will suppose that there is in her experience a "God-making" content-property, for example, "infinite, unconditional love directed to me." Another example of a God-making property would be the idea of the "numinous" to be found in Rudolf Otto's *The Idea of the Holy* (Otto, 1923).

The questions are (1) whether this experience is of a real being that is external to the experience and (2) whether this being, if there is one, possesses this property actually or abstractly. This is what the proof-structure actualized above and applied to religious experience is intended to show. Here is the proof:

1. Sarah is having an objective experience E with a God-making property-content. (Premise)

2. The cause of her objective experience E is an actual substance containing the God-making property actually or abstractly. (1, 2 Causal Principle)

3. The source (cause) of E is outside her cognitive system. (Premise: inferred source-location information)

Thus:

4. There is an actual substance containing a God-making property either actually or abstractly existing in the world external to Sarah's cognitive system. (3, 4, conjunction)

Thus,

5. The object of Sarah's experience is a real object. (4 and the definition of "real object"). *QED*

I offer here no argument to eliminate the possibility of abstract containment of the God-making property in premise 5. In case it cannot be eliminated, then the experience has the same status as a brain-in-a-vat hallucinatory experience: potentially hallucinatory, not actually hallucinatory, unveridical, yet of a real object. The only way to ensure the veridicality of the experience would be to eliminate the option of abstract containment in line (4). This would have to be done in an independent demonstration, if at all.

Even if we cannot do this, it does not automatically follow that we fail to demonstrate the reality of God. For, even if the God-making property that the external object contains is not as we would understand it literally, being only analogous to it (thus making the experience non-veridical), it might be that the possession of the analogous property would nevertheless be sufficient to establish the existence of a supernatural being God-like in its properties. This too would have to be established in an independent demonstration. A conception of God as the greatest conceivable being might allow for such a demonstration. But that is a story for another time.

Technical Appendix 1: Foundationalism and General Epistemology

It may be helpful to the non-specialist reader to locate the Visual Experience Principle and Moderate Foundationalism within a basic classification of kinds of epistemic justification (the kind of justification that beliefs have when they are candidates for knowledge) countenanced in recent Epistemology.

Sometimes we justify a belief by showing that it can be inferred from another belief or set of beliefs wherein the basis-beliefs are justified themselves and transmit their justification to the inferred belief by means of the inference. For example, if I am justified in believing that the weather report predicts favorable weather tomorrow then I can arrive at a further justified belief by inferring from this belief that the weather probably will be favorable tomorrow. We shall call this kind of epistemic justification, "inferential justification." It is characteristically expressed in the form of a conditional statement, "If a belief that p is justified and q can be inferred from p, then a belief that q is justified." A statement of this kind can be called an *Inferential Justification Principle*.

But there are also kinds of non-inferential justification that some epistemologists have proposed. These are characteristically expressed in terms of a *Warrant Principle,* a conditional statement ("if…then…") or a biconditional statement ("iff") of the form (here I use the conditional version): "If some condition C obtains then a certain belief that p is warranted," where the C-condition does not itself contain the normative language of warranting. This is how Warrant Principles differ from Inferential Justification Principles. The *Visual Experience Principle* employed in the text is an example of a Warrant Principle rather than an Inferential Justification Principle. In this case the C-condition refers to a sensory experience.

It is customary to say that an epistemological theory employing this kind of warrant principle is a *Foundationalist Epistemology.* Accordingly, Warrant Principles with sensory-experience C-conditions can be called *Foundational Warrant Principles.* The VEP is a Foundational Warrant Principle in this sense. (For a reader interested in complications, here is a complication: Foundationalist Epistemological theories are usually contrasted with Coherentist Epistemological theories, but Coherentist Epistemologies can also be expressed in Warrant Principles (see Sosa 2008), where the C-condition refers to a coherence property of a set of beliefs. These can be called *Coherentist Warrant Principles*, an example of which might be:

> *CWP*: If there is a set of beliefs B that a subject S holds, p is a belief held by S, p is in B and the set of beliefs B meets a suitably high standard of explanatory and logical coherence, then the belief that p is warranted for S.

Notice that, although beliefs are present on both sides of the conditional here, the normative term "warrant" appears only in the consequent of the principle, not in its antecedent, so CWP does not count as an Inferential Justification Principle.

So far, we have explained why the VEP is classified as a form of Foundationalism. We now need to consider what makes it "moderate." The alternatives to "moderate" are "strong" and "weak."

A *Strong Foundational Warrant Principle* assigns warrant to a belief *independently of inferential justification from other beliefs* and makes the warrant *logically conclusive*. (When, and only when, the holding of the C-condition entails the truth of the belief warranted, then the warrant is logically conclusive.) The VEP is not a Strong Foundational Warrant Principle, since it fails both requirements. Take the second first. If I have an experience that there are pink elephants on the sidewalk before my eyes and come to believe on that basis that there are pink elephants on the sidewalk, that belief need not be true. So, the warrant here is not logically conclusive warrant. Moreover, I may have background beliefs indicating the extreme improbability of pink elephants being on the sidewalk in my hometown that *defeat* the kind of justification that accrues to my belief from the experience via the VEP. Because it has this feature, the kind of justification at issue here is called "prima facie justification" or "defeasible justification." (For a classic account of prima facie justification and justification-defeaters, see Pollock, 1974.) Since what defeats prima facie foundational warrant is inference from background beliefs, the first requirement for strong foundational warrant is also not met.

A *Weak Foundational Warrant Principle* assigns *some contribution* to the warrant of a belief p to a suitable sense experience but does not allow that under any conditions can a sense experience *by itself be sufficient* to assign warrant to a belief. However, in the absence of any defeater-beliefs held by S, S can be warranted in believing that p on the basis of a suitable experience in the C-condition of the VEP alone. So, the VEP is not a Weak Foundational Warrant Principle.

Technical Appendix 2: Kant's Progressive and Regressive Methods

In Kant's *Prolegomena to Any Future Metaphysics* (Kant, 1984 [1784]: 28, note) Kant introduces the distinction between a "progressive method" and a "regressive method." With the regressive method Kant starts with something that we are interested in proving, for example, in the case of metaphysics, the existence of an objective world order. Kant calls our cognitions of an objective world-order "experience" and wonders how the world must be if we have experience in this sense. The answer to this question is what Kant calls "conditions for the possibility of experience," the proof of which is carried out in the *Critique of Pure Reason* and is called "The Transcendental Deduction of the Categories." Among these conditions we find two main kinds – conceptual conditions and intuitional conditions. The former include causality and the latter are properties of space and time.

Kant then employs a "progressive method" at two main points in his metaphysics. This method always starts with something we know or can prove rather than something we would like to prove. One starting point is the Cartesian doctrine that we know that we have thoughts – what Kant calls "the I-think" – and derives from this the non-Cartesian conclusion that there must be an objective world order, the starting point for the regressive method. The other starting point for the progressive method is perception: we know we have it, Kant proves that it has a form, which is space and time, and he proves that space is Euclidean, and time is linear.

In sum: The whole methodological package for Kant consists of both regressive and progressive lines of reasoning, as follows. The regressive part is a conditional argument from the existence of an objective world-order to the need for there to be causality and the other categories, from which Kant derives a corollary C: that there needs to be space and time with certain characteristics. The progressive part is two non-conditional arguments, one establishing that there is an objective world-order and the other that there is space and time with the requisite characteristics. The first combines with the conditional argument to make for a progressive proof of the category of causality and the other categories; the second is an *a priori* argument independent of the others for Corollary C, and thus serves as an independent check on the soundness of the progressive proof.

The reception among contemporary commentators of Kant's two methods has been mixed, with the regressive method much admired, the progressive method less so. (See Ameriks for a classic discussion of these two methods in K. Ameriks, "Kant's Transcendental Deduction as a Regressive Argument." *Kant Studien* 69 [1978]: 272-92.)

Works Cited

K. Ameriks. 1978. "Kant's Transcendental Deduction as a Regressive Argument." *Kant Studien* 69: 272-92.

Audi, R. 2003. *An Introduction to Epistemology*, Second Edition. New York: Routledge.

Contact. 1997. Released by Warner Brothers, July 11. Directed by R. Zemeckis and starring Jodie Foster and Matthew McConaughey. Based on the novel of the same name by Carl Sagan.

Dennett, D.C. 1971. "Intentional Systems." *The Journal of Philosophy*, Vol. 68, No. 4 (Feb.): 87-106.

Dormandy, K. 2013. "Religious Evidentialism." *European Journal for Philosophy of Religion,* 5/2 (Summer): 103-126.

Descartes, R. 1984 (1641). *Meditations on First Philosophy*. In *The Philosophical Writings of Descartes, Vol. II*. Edited by J. Cottingham, R. Soothoff and D. Murdoch. Cambridge and New York: Cambridge University Press, 113-14. Cited in the text as "CSM II."

Gregory R. L. 1966. *Eye and Brain: The Psychology of Seeing*. London: Weidenfeld & Nicolson. 5th edition (1997): Oxford University Press/Princeton University Press.

Just, M. 2020. "The New Science of Thought Imaging: Using Machine Learning to Break the Brain's Code for Representing Concepts." The Graham Goddard Lecture, Psychology Department, Dalhousie University, March 06, 2020.

Otto, R. 1923. *The Idea of the Holy.* Oxford: Oxford University Press.

Pollock, J. 1974. *Knowledge and Justification.* Princeton: Princeton University Press.

Sagan, C. 1985. *Contact.* New York: Simon and Schuster.

Sosa, E. 2008. "The Raft and the Pyramid: Coherence versus Foundations in the Theory of Knowledge," *Midwest Studies in Philosophy* 5 (1): 3 -26.

Vinci, T. C. 2015. *Space, Geometry and Kant's Transcendental Deduction of the Categories*. Oxford and New York: Oxford University Press.

Vinci, T. C. 2016. "Descartes' Proof of Body." In *The Cambridge Descartes Lexicon.* Edited by L. Nolan. Cambridge: Cambridge University Press, 70-74.

Notes:

[1] This movie is based on the novel of the same name by a well-known scientist, the late Carl Sagan (1985). My primary source here is the movie, not the book.

[2] Thanks to an anonymous referee for insisting on clarity on this point.